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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,246	11/18/2003	Edward William Adams	130924.62121	7752

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EXAMINER
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TSOY, ELENA

ART UNIT	PAPER NUMBER
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1762

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Advisory Action</b> <b>Before the Filing of an Appeal Brief</b>	<b>Application No.</b> 10/717,246	<b>Applicant(s)</b> ADAMS ET AL.	
	<b>Examiner</b> Elena Tsoy	<b>Art Unit</b> 1762	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 21 June 2006 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☐ The period for reply expires \_\_\_\_\_ months from the mailing date of the final rejection.  
 b) ☒ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☒ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
 (a) ☒ They raise new issues that would require further consideration and/or search (see NOTE below);  
 (b) ☐ They raise the issue of new matter (see NOTE below);  
 (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
 (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
 5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
 6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
 7. ☒ For purposes of appeal, the proposed amendment(s): a) ☒ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
 The status of the claim(s) is (or will be) as follows:  
 Claim(s) allowed: \_\_\_\_\_.  
 Claim(s) objected to: \_\_\_\_\_.  
 Claim(s) rejected: 1-16.  
 Claim(s) withdrawn from consideration: \_\_\_\_\_.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
 9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
 10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☐ The request for reconsideration has been considered but does NOT place the application in condition for allowance because: \_\_\_\_\_.  
 12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08 or PTO-1449) Paper No(s). \_\_\_\_\_.  
 13. ☐ Other: \_\_\_\_\_.

***Advisory Action***

1. The amendment filed on 6/21/2006 under 37 CFR 1.116 in reply to the final rejection has been considered but is not deemed to place the application in condition for allowance and will not be entered because: the proposed amendment raises new issues, such as *forming a hydrophobic passivating layer on the surface of the plurality of quantum dot nanoparticles*, that would require further search and consideration since they were not searched and addressed in the Final Office Action mailed on 4/21/2006.

***Response to Arguments***

2. Applicants' arguments filed June 21, 2006 have been fully considered but they are not persuasive.

Applicants assert that classically, Bawendi utilizes a thio acetic acid to distribute nanocrystals in the aqueous solvent. As to AB copolymer, Bawendi requires the AB copolymer be linked to the quantum dot, stating clearly that an AB copolymer may be used as long as it has the requisite linking group and pendant hydrophilic region. To suggest that Bawendi contemplates an AB copolymer without linking it to the quantum dot, would like to destroy the intended purpose of Bawendi. The quantum dot alone is hydrophilic and if admixed with AB copolymer, the hydrophilic regions would be expected to interact with the hydrophilic portion of the AB copolymer thereby exposing the hydrophobic regions of the AB copolymer to the solution, making the surface modified dot more water insoluble. Ma does nothing to rectify this situation. Ma simply provides an AB block copolymer whose hydrophobic portion interacts with a hydrophobic particle to render the hydrophobic particle water soluble by exposing the hydrophilic portion of the block copolymer to the solution. However, Bawendi never starts with a hydrophobic particle. The quantum dot of Bawendi alone is hydrophilic and the functionalized quantum dot of Bawendi is water soluble. One of skilled in the art would not turn to Ma with reasonable expectation of success unless they modify the AB copolymer to have two pendant hydrophilic regions (i.e. the linking group and the "B" portion).

The Examiner respectfully disagrees with this argument. In contrast to Applicants statement, the nanocrystal of Bawendi includes a semiconductor nanocrystal core (quantum dot)

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overcoated with a passivating (See column 1, lines 55-58; column 2, lines 21-23) shell layer and an outer layer at the outer surface of the overcoating layer; the outer layer includes a molecule which can be a **block** copolymer, wherein a first hydrophobic block is provided with a pendant group capable of functioning as **linking** moiety Y (See column 6, lines 26-28) such as **carboxylate** group (See column 6, lines 41-43) for attachment of the molecule to the overcoating layer and a second block provided with a hydrophilic group which serves as a hydrophilic region (See column 6, lines 28-31) so that hydrophilic region is spaced apart from the linking group by a hydrophobic region sufficient to minimize electron charge transfer across the hydrophobic region (See column 3, lines 44-67). The passivated semiconductor nanocrystals are *soluble* or dispersible only in *organic solvents* (See column 2, lines 48-53). In other words, starting semiconductor nanoparticles (passivated quantum dot) of Bawendi *before* applying the *outer* layer of a **block copolymer** (See column 15, lines 55-57) are *hydrophobic* nanoparticles; and the outer layer *links* to the overcoating layer by a first *hydrophobic* block provided with pendant **carboxylate** groups.

Ma teaches that AB block copolymer wherein the A block is a hydrophobic block and serves to **link** with a pigment such as semiconductive titania nanoparticle (which is naturally *hydrophobic*) (See column 8, line 47), and the B block is hydrophilic can be used to disperse the hydrophobic semiconductive titania nanoparticle in the aqueous medium (See column 3, lines 26-33). The hydrophobic block A can be formed by free radical polymerization (See column 6, lines 52-53) from a hydrophilic acrylic monomer provided with **carboxylate** group (See column 3, lines 35-40). In other words, Ma expressly teaches that the *hydrophobic* block A provided with **carboxylate** group (See column 3, lines 35-40) serves to **link** to a nanoparticle such as semiconductive titania nanoparticle (See Abstract; column 3, lines 27-28).

Thus, both Bawendi and Ma start with **hydrophobic** nanoparticles. In both Bawendi and Ma a **block** copolymer is **linked** to the surface of hydrophobic semiconductive nanoparticle via a first hydrophobic block provided with a pendant **carboxylate** group, while the second hydrophilic block in both Bawendi and Ma is used to disperse the hydrophobic semiconductive nanoparticle in the aqueous medium.

Therefore, one of skilled in the art would turn to Ma with reasonable expectation of success to use the AB copolymer of Ma as or instead of block copolymer of Bawendi.

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Note that Bawendi alone teaches AB block copolymer. It seems that Bawendi alone also teach non-entered Amendment.

***Conclusion***

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Thursday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy  
Primary Examiner  
Art Unit 1762

**ELENA TSOY  
PRIMARY EXAMINER**  
*ETsoy*

June 26, 2006